

EFFECT OF CONCEPT ATTAINMENT MODEL ON PUPILS ACHIEVEMENT IN SCIENCE

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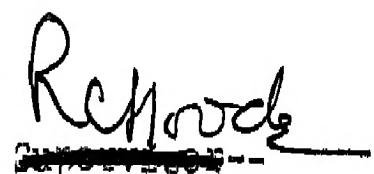
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C H A P T E R - I

INTRODUCTION

INTRODUCTION

There is a popular belief that teaching is emanating from the behaviour of the teacher and it has to be evaluated in terms of learning outcomes as teaching and learning are complementary processes. Learning to learn is not just a slogan. It denotes a specific pedagogic approach that teacher must themselves master if they want to match learning experiences to the requirements of the learner. Teaching is an interactive process the formation of which consists of the interchange of ideas, information observations and point of view between a teacher (s) and an individual or individuals and a group called teachers. If the teacher is to adopt and restructure the learning experiences to meet the observations, interests and capabilities of the learner his approach to teaching should be in relation to objectives of teaching should, nature of learner and nature of content. All this requires training for effective teaching as a pre-requisite condition. Therefore training for effective teaching has become a fundamental goal underlying teacher training programme.

Measure of effective teaching strategy is the teaching learning outcome which in turn is the function of interaction between the teacher, content and learner,

Here teaching is not talking alone and learning is not listening alone. Teacher and learner must be active in manipulating the system of objects and for organism of interest so that inherent regulation in the experience can be discovered.

1.1.0 SELECTED SUGGESTED MEASURES IN THE AREA OF TEACHING LEARNING

A good deal of discussion has been going on in recent years to revitalize class-room teaching in Indian Schools. The secondary education commission emphasised the need of dynamic methods of teaching. Kothari Education Commission (1964-66) too recommended to improve upon methods of teaching in educational institutions. The N.C.E.R.T. and State Level Bodies like SCERT have also made many efforts to improve upon the competence of teachers as far as methods of teaching are concerned. A few innovations like SITE, Radio-Broad Casting, Correspondence Courses aim at designing suitable instructional design. Recently the UGC has made a few meaningful efforts to focus upon the problem of teaching methodology in Higher Education. A few experiments conducted by Hashangabad Science Teaching Project, Sarabhai Science Community Centre, Gyan Prabodhini, Pune etc., are commendable.

The search for good teaching models has agitated Bruce Joyce and Weil Marsha. A model of teaching is a

plan or pattern that can be used to shape curriculum, to design instructional materials and to guide instructions in class room and other setting. These models of teaching have cropped up in all sorts of places. Some have been invented by class room practitioners, others are the work of substantial research in psychology and training. A number of them came from the theopapists and a great many from philosophers.

Joyce and Weil (1980) have described twenty two models of teaching which constitute a basic educational repertoire. These twenty two models have been grouped in to four categories, such as : Information processing Model, Personal Model, Social Interaction Model and Behaviour Modification Model. The sample synoptic view of these four categories is given below in Table 1.1.

TABLE - 1.1 FAMILIES OF MODELS OF TEACHING

S.NO.	CATEGORY OF MODEL	EXAMPLES OF MODEL
1.	Information Processing Model.	1. Inquiry Training 2. Concept Attainment 3. Advance Organizer
2.	Personal Model	1. Non-directive Teaching. 2. Awareness Training 3. Synectics.

S.NO.	CATEGORY OF MODEL	EXAMPLES OF MODEL
3.	Social Interaction Model.	1. Group Investigation 2. Social Inquiry 3. Role Playing.
4.	Behavioural Models	1. Contingency Management 2. Self Control. 3. Assertiveness Training

1.2.0 INFORMATION PROCESSING MODEL OF TEACHING :

The models of this family share orientation towards the information processing capability of students and ways they can improve their ability to master information. Some information processing models are concerned with the ability of the learner to solve problems, others are concerned with general intellectual ability. A large number emphasize concepts and information development from the academic disciplines. These models are concerned with social relationship and development of integrated and functioning self. The route however, is through intellectual functioning.

INFORMATION PROCESSING FAMILY AND CAM :

The reactions and attitudes of student-teachers, teacher educators, and administrators are in favour of information processing models of teaching. One of the reason is stated that this family of models is more akin to lecture approach which is very prevalent in all types of Indian Schools.

Out of this family of seven models of teaching the investigator has selected the Concept Attainment Model (CAM) due to the availability of the training package. The training packages of Advance Organiser Model and Inquiry - Training Model are also available. The advance - Organiser model is difficult to understand and execute. Inquiry Training Model does not fit into the present disciplinary framework. Concept Attainment Model fits into disciplinary framework and also falls within the acceptability level.

1.2.1

CONCEPT AND CONCEPT ATTAINMENT :

Different types of meaning of concept and concept attainment have been given by eminent - educationists as follows :

(a) Concept :

Bruner, Goodnew and Austin "accept the

proposition that concepts are classification or categories and postulate that there are three kinds of concept : Conjunctive, Disjunctive and Relational".

According to Cole and Bruce :

"A concept is a class idea, Chair as a concept, generalizes many specific percepts of that their this one, those other chairs, etc. 'A chair is something to sit upon. A concept becomes a substitute for a thing that is not present, that can not be perceived then and there. The concept ordinarily becomes attached to a symbol, the sound or sight of the word 'Chair'".

According to Russell :

"A concept is a generalization about related data. It is a more-or less stable percept (a result of a sensory experience). When a child has learned to distinguish cats from other animals, whether the cats be large or small, black, white, grey, ginger or tortoise coloured, he applies the word cat to the class of ideas and uses a concept".

According to Mc Dorald :

"A concept is a classification of stimuli that have common characteristics".

(b) Concept Attainment :

Russell notes that "the adult does not - typically acquire new concepts so much as he learns new variation and hierarchies". The processes involved in concept formation are not closed to the adult, because vast number of concepts are formed, by the time adulthood is reached, now concepts are merely less likely to occur.

The method of acquiring concept in adulthood has been referred by Bruner and his associates as concept attainment. "Attainment refers to the process of finding predictive defining attributes that - distinguish examples from non-examples of the class one seeks to discriminate."

According to Encyclopedia of Educational Research
concept attainment strategy :-

The concept attainment (CA) strategy is concerned with two separate but related ideas: the nature of concepts themselves and the thinking process used by individuals to learn concepts.

All concepts possess at least four components attributes, example, definition and hierarchical - relation.

The present study has primarily focussed on concept attainment, therefore, studies related to concept attainment have been given more prominence.

CONCEPTWISE CLASSIFICATION OF STUDIES :

SIOKAN (1981) :

In the study an evaluation of pre-service teacher concept training strategy had developed, concept teaching strategy for training preservice teachers in teaching concept. Two concept teaching strategies were developed. First one was concept attainment strategy, second one was concept relationship strategy.

CLANCE (1980) :

Clance (1980) has studied the effect of positive and negative instances in teaching Mathematics Concept.

PRAPVADE (1980) :

Prapvade (1980) has studied the use of prototype and skill development instructional presentation forms in acquisition of Mathematical Concept a regular - polygon.

SHIRLUG (1980) :

The main objective of his study was, the effect of negative instances in identification of activity concept.

ANTHONY (1980) :

Had studied the acquisition of 'higher order test administration skills utilizing concept based training strategy. The main focus of the study was to know how would concept based training method will help in acquisition of higher order test administration - skills.

HOVDEN (1980) :

Hovden (1980) had examined level of concept-attainment of mathematics concept of "variable" by college students.

TENNER (1980) :

The study entitle student mastery of classificational concepts in Zoology course. In this study he tries to determines whether or not presentation in lab of definition example and non-example or salient defining attributes of Zoology concepts would enhance concept attainment.

JOSEPH (1980) :

In this study, the attainment of Mathematical set theory concepts were studied. These concepts were attained by those subjects having field development/global cognitive styles. The concepts - were presented in written format

employing three different instructional strategies

(a) Deductive (b) Inductive and (c) Cued Inductive.

ENNETH (1981) :

The investigator had studied the effect of feed-back and prompting on learning some psychological concepts from concept programmed material.

From the above review, one can make out that there is only one study (Tenner 1980) where science concept attainment had been studied.

GRADE LEVEL (OF SUBJECTS) CLASSIFICATION OF STUDIES :

Here various studies of concept attainment are grouped according to grade or age level of subject which formed the sample of the studies.

SIOKAN (1980) :

Siokan (1980) had conducted a study on - pre-service teachers under the title "An evaluation of preservice teacher concept training strategy".

ETTAYEB (1981) :

In this study entitled 'The effects of pictorial representation on concept learning'. The subject were Sixth Grade Childrens 11 to 12 years old.

CLANCE (1980) :

Clance (1980) had conducted a study entitled 'the effect of negative and positive instances in teaching mathematical concepts to freshman at Florida. The subjects for this study are Frashmans of College.

PRAPVADEE (1980) :

In his dissertation entitled - 'Acquisition of a mathematical concept by children using prototype and skill development instructional presentation forms ! This study was conducted on third grade children.

SHIRLEY (1980) :

Shirley (1980) had conducted a study on seven, eleven, fifteen years old children under the title. The use of negative instances in Identification of Activity Concepts.

HOVDEN (1980) :

The title of this dissertation was measurement of the levels of attainment by college - mathematics students of the concept "variable". The subjects were college students.

JAMES(1979) :

James (1979) had conducted a study entitled 'The effect of instructions and practice on concept-identification. 'The subjects were college students from introductory psychology courses.

TENNER (1980) :

In this dissertation entitled - 'student mastery of classificational concepts in introductory college Zoology'. The subjects were college students studying zoology.

JOSEPH (1980) :

Joseph (1980) had conducted a study entitled - 'The interactive effects of global cognitive style and general mental ability with three instructional strategies on a mathematical concept task. The subjects were sixth grade children.

BENNETH (1980) :

Benneth (1980) had conducted a study of students learning Introductory Psychology course. The title of this study was promoting and feed-back variable in the concept of programming.

Most of the above mentioned studies have reflected that the subjects were mostly from College level, a few studies were conducted on primary grade children.

1.3.3 VARIABLE AND OBJECTIVEWISE CLASSIFICATION OF STUDIES :

All studies related to concept attainment were classified according to objectives, variables and finding.

An overview of this classification is given in the following Table.

The analytical approach which has been adopted for reviewing these studies help a lot in finding out the explored areas and gap areas in concept attainment field. The following observations emerged after this analysis :

- a) Treatment provided for concept attainment are of various types. It ranges from pictorial representation to self instructional materials. It is also noticed that concept attainment strategy was combined with other types of variables. Two types of presentation forms for concept learning were provided. One of them was based on CA strategy and the other was expository or inquisitory form only. Effect of Positive and Negative instances on concept learning was combined with change of attitude of student towards mathematical concept. CA strategy was combined with concept relationship. Three different types of strategies for concept teaching were developed. There are : Inductive, Deductive and Cued Inductive Strategy. Their individual effects as well as interactive effect on were studied.

From these treatment, it was not clear whether Reception type or selection type or unorganized type of strategies were followed.

(b) Dependent measures were also of various types. It is observed that most of the dependent measures were in the form of sources on criterian test such as, scores on the test for measuring concept teaching proficiency, scores on concept attainment developed from Klausmeir (1968) model; and scores on similarities test, and Gestalt completion test for measuring cognitive style; scores on Post test and retention test measuring for mathematical concepts. A few other dependent measures were different from scores on criterian test. Such as number of instances needed to identify the concept, accuracy and consistency of naming a concept, students errors in classifying a novel concept. There are certain other dependent measures related to other variable such as attitude scores, cognitive style measuring scores etc.

(c) Finding of there studies also varying in trends. Some of the studies indicate Positive results that is, treatment had produced significant effect, concept attainment. For example Clance (1980) reported that the use of Positive & Negative instances have significant effect in CA than the use of Positive instances alone. Attitudes of student towards mathematics had also been changed

after the treatment of concept based training strategy. Prapradee(1980) found that concept learning was facilitated by the presentation of best examples than by the presentation of a list of critical attribute.

The five studies mentioned above indicate-negative results, that the treatment did not produce significant effect on concept learning. Gregorg(1981) had observed that the proficiency in concept teaching was not acquired by preservice teacher who were trained through concept based training strategy. Tunner(1980) found that presentation of definition example and non example did not have significant effect on concept training.

From the above discussion, the following points emerged:

- a) Attainment of science concept were negligibly studied.
- b) Sample used for these studies were mostly from college level.
- c) Findings of studies did not indicate a definite direction. In other words, we can say that it is not clear whether or not concept attainment - strategy can produce significant effect.

d) It is also not clear whether these studies were conducted following the guidelines by - Joyce and Wil (1980)

Keeping all these points in the mind there is need to conduct a study to test the attainment of Science concept by Middle School children. The present study is a step in this direction.

1.4.0 STATEMENT OF THE PROBLEM

'Effect of concept attainment Model on pupil achievement in Science'

1.4.1 OBJECTIVES AND HYPOTHESIS OF THE STUDY:

To find out the effect of concept attainment model on the Pupil achievement in Science.

1.4.2 HYPOTHESIS:

On the basis of above objective the following hypothesis was formulated:

There will be no significant difference between the mean achievement scores of the science student taught through the concept attainment model vis-a-vis traditional method.

1.4.3 KEY TERMS USED:

(i) CONCEPT:

According to dictionary by Good 'An idea or representation of a common element or attribute by which groups or classes may be distinguished.'

(ii) CONCEPT ATTAINMENT (CA) :-

The CA strategy is concerned with two separate but related ideas: The nature of concept themselves and the thinking processes used by individual to learn concepts.

iii) MODEL:

A pattern or plan, which can be used to shape a curriculum or course, to select Instructional Material and to guide actions of the teachers.

iv) EFFECTIVENESS:

Use of a plan for instruction or presentation which causes a desired change in the learner's behaviour .

(v) REACTION:

Response to a stimulus, any method and - emotional state brought about by a situation.

vi) ACHIEVEMENT:

The status of a pupil with respect to attained skills or knowledge as compared with other pupils or with the adopted standards of schools.

1.5.0 LIMITATIONS:

- i) There were three variations of concept attainment model .Out of these three, only Reception concept Attainment was used for studying the effectiveness of model.
- ii) There were three types of concepts as described by G.S. Bruner; in this study only the conjunctive -

concepts were considered.

- iii) There were many conjunctive concepts in the science books of Middle standard; out of these only Eight concepts were taught through GAM (Concept Attainment Model).
- iv) Out of several criteria for testing the effectiveness of model; only one criteria, namely, Achievement Test for Selected Concepts of Science Chemistry (ATSC) was taken.

1.6.0 CHAPTERIZATION:

CHAPTER - I : INTRODUCTION:

This study has been introduced in this chapter.

The need of new method of teaching and training has been highlighted.

CHAPTER - II: METHOD AND PROCEDURE:

It describes the experiment, procedure, sample, materials, tools and statistical techniques used to analyse and interpret the data.

CHAPTER - III : MASTERY OF CAM AND PREPARATION OF MATERIAL:

It describes the preparational aspect of the study. This preparation can be divided in two part, first is Mastery over the Model and second is - preparation of the tools.

CHAPTER - IV : RESULT AND DISCUSSION :

It gives analysis, interpretation and discussion of data. Results are presented in this chapter.

CHAPTER - V : SUMMARY :

It gives the summary and conclusion of the study and also gives suggestion for further research.

***** CHAPTER - II *****

***** METHOD & PROCEDURE *****

2.00 INTRODUCTION :

The present study is related with Reception concept attainment model (RCAM). The main aim was to know the effectiveness of the Concept Attainment Model. The effectiveness of the Concept Attainment Model was judged on the basis of achievement score of the students which they secured on the achievement test.

The design of the study has been given in Table 2.1.

TABLE 2.1DESIGN OF THE STUDY

2.1.0	Mastery of Model	2.2.0	Studying the effectiveness of the CAM.
2.1.1	Theoretical Understanding.	2.2.1	Design
2.1.2	Develop lesson Plan according to LPG	2.2.2	Sample
		2.2.3	Tools
2.1.3	Population	2.2.4	Statistical Analysis.
2.1.4	Treatment		

2.1.1 THEORETICAL UNDERSTANDING OF RCAM :

There are three phases of RCAM. In each phase of the model are different types of teaching. A thorough knowledge of all these activities in the phases contributes to the theoretical understanding of this model.

The description of these phases and their activities are give in Table 2.2.

TABLE - 2.2.

PHASES	ACTIVITIES
<u>Phase One :</u> presentation of Data and Identification of the concept.	<ul style="list-style-type: none"> 1. Present labelled examples 2. Compare attributes in Positive and Negative Examples. 3. Generate and test hypothesis. 4. Name the concept. 5. State and definition according to the essential attributes.
<u>Phase Two :</u> Testing attainment of the concept.	<ul style="list-style-type: none"> Identify additional unlabelled examples as 'YES' or 'NO' Generate examples.
<u>Phase Three :</u> Analysis of thinking strategies.	<ul style="list-style-type: none"> Describe thoughts Discuss role of hypothesis and attributes.

PHASES	ACTIVITIES
	Discuss type and number of the hypothesis.
	Evaluated the strategies.

when the investigator became well acquainted with the theoretical phase of the Model, investigator tried continued to learn the practical phase.

2.2.0 STUDYING THE EFFECTIVENESS OF RCAM :

The present study intends to find out the effectiveness of RCAM in terms of achievement scores of students of middle grade levels. For this purpose, a simple Post Test Parallel Group Design was employed. The two groups, namely, the experimental group and the control group were formulated in such a way that the two groups belonged to two independent setting. In other words the experimental group was picked up from one school and the control groups was picked up from the other school. The treatment was assigned randomly.

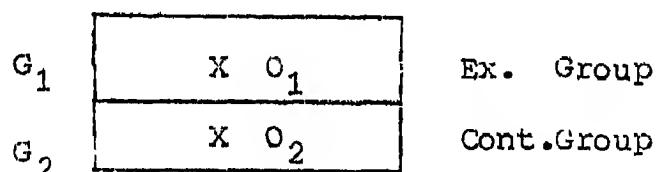
a) Experimental Group : This group was given the treatment in the form of Reception Concept Attainment Model (RCAM) by the investigator.

(b) Control Group : This group was taught the same concepts by traditional method. In other words, this group was not given the treatment.

After the completion of the treatment the experimental group and the control group were given Achievement Test.

2.2.1 DESIGN :

This design is being placed below diagrammatically:-



Where : X = Treatment

O_1 = Post Test Observation of experimental Group.

O_2 = Post Test observation of control group

G_1 = Experimental Group

G_2 = Control Group.

2.2.2 POPULATION :

The population of the study was all Hindi Medium students of Middle grade studying in average socio-economic schools of Rohtak City, during the session 1986-87.

These schools ought to be morning shift schools so that investigator could also attend to her regular studies in the department while keeping the objectives of the study in mind, the researcher choose Middle grade population on account of the following reasons.

- (a) Reception concept attainment model (RCAM) is the first and the foremost model in the hierarchy of concept attainment model (CAM) and this model is suitable for younger pupils. Therefore, investigator chose to conduct the study for Middle class students.
- (b) New Method of teaching are easily applicable to children possessing flexible attitudes.

2.2.3. SAMPLE :

The population for the present study represents students of Middle Class of average schools of Rohtak city. Out of these schools, two schools were selected to form the sample. The selection of these schools was made on the basis of the judgement of the investigator e.g. Investigator chose those schools which are nearer to her home and time of the schools was suited to her. These schools were :

1. Shiva Public School (SPS), Rohtak.
2. Vaish Public School (VPS), Rohtak.

Agewise and Schoolwise distribution of pupils in experimental and control group is given in Table 2.4.

TABLE 2.4. "AGEWISE & SCHOOLWISE DISTRIBUTION IN THE SCIENCE"

AGE GROUP	SHIVA PUBLIC SCHOOL	VAISH PUBLIC SCHOOL	TOTAL
13 - 14	24	18	42
14 - 15	16	12	28
T O T A L	40	30	70

2.2.4. TOOLS :

The following tools namely, The achievement test for selected concepts of science (Chemistry (ATSCS) was used for the measurement of dependent variable.

Achievement Test for Selected Concepts of Science:

The investigator prepared (ATSCS) teacher made achievement test in which there were 40 items representing all the concepts taught to pupils. 40 minutes time was fixed for completing the test. The test was administered to the students and scoring of marks was given in such a way that one mark was allotted to each correct item.

Instructions given in the Achievement Test for selected concepts of science (ATSCS) clarifies the method of solving the questions. Besides this, a demonstration question was also given as a sample, so that pupils may easily solve the item correctly.

Distribution of items according to the concepts is given in Table 2.5.

TABLE 2.5. "DISTRIBUTION OF ITEMS ACCORDING TO THE EIGHT CONCEPTS"

Sl. No.	Concept	Nature of Item		Total Item.
		Multiple Choice	Short Answer	
1	2	3	4	5
1.	<u>ACIDS :</u>		-	
	a) Definition	6	-	6
	b) Identification			
2.	NITRIC ACID & ITS PROPERTIES (Physical & Chemical)	4	2	6
3.	SULPHURIC ACID & ITS PROPERTIES.	6	-	6
4.	HYDROCHLORIC ACID AND ITS PROPERTIES.	5	-	5
5.	<u>BASES :</u>		-	
	a) Definition	5	-	5
	b) Identification			
6.	CALCIUM HYDROXIDE & ITS PROPERTIES.	3	-	3
7.	SODIUM HYDROXIDE	4	-	4
8.	SALT AND THEIR TYPES	5	-	5
TOTAL		38	2	40

From the above distribution of items, it is clear that there are at least three items for each concept and the nature of item was decided according to the instructional objectives of the lesson.

TREATMENT :

The nine concepts selected by the Investigator were taught to the experimental group through various phases of the Reception Concept Attainment Model and to the control group by the traditional method. Lesson were taught in the schools period prepared the lesson plans according the guide lines of Planning Guide provided by Weil Marsh and Bruce Joyce. The following three phases of the concept attainment models are followed by the Investigator for teaching the experimental group.

PHASES	ACTIVITIES
<u>Phase One :</u> Presentation of Data and identification of the concept.	1. Present labelled examples. 2. Compare attributes in positive and Negative examples. 3. Generate and test Hypothesis 4. Name the concept. 5. State and definition according to the essential attributes.
<u>Phase Two :</u> Testing Attainment of the Concept.	1. Identify additional unlabelled examples as 'YES' or 'NO' 2. Generate examples

PHASES	ACTIVITIES
<u>Phase Three :</u> Analysis of thinking strategies.	<ol style="list-style-type: none"> 1. Describe thoughts. 2. Discuss role of hypothesis and attributes. 3. Discuss type and number of hypotheses. 4. Evaluate the strategies.

So keeping in mind all these objectives of three phases the actual lessons were prepared and given to the pupils.

In the last achievement test, for selected concepts of Science (ATSCS) was administered to assess the understanding of pupils about the Model.

STATISTICAL ANALYSIS :

Statistic has become indispensable tool for research. It is fundamental to the proper analysis of data and investigation of a complex phenomena.

Statistical Analysis was used for achieving the following objective of the study to find out the effect of concept Attainment Model on pupils achievement in science. To fulfil the above objective the main statistical techniques employed are briefly described below :-

't-test' :

The effectiveness of Reception Concept Attainment Model (RCAM) was studied by calculating the significance of difference between the mean scores of achievement test, administered on the experimental and control group, for small independent samples this test has been defined in terms of the following formula :

$$t = \frac{M_1 - M_2}{SE_D}$$

$$SE_D = SD \sqrt{\frac{1}{N_1} + \frac{1}{N_2}}$$

$$SD = \sqrt{\frac{E(x_1 - M_1)^2 + E(x_2 - M_2)^2}{(N_1 - 1) + (N_2 - 1)}}$$

Where M_1 = The mean of Group - I

M_2 = The mean of Group - II

$E(x_1 - M_1)^2 = x_1^2$ is the sum of the square deviation around the mean of group - I

$E(x_2 - M_2)^2 = x_2^2$ is the sum of the square deviation around the mean of Group-II.

CHAPTER - III

MASTERY OF CAM AND PREPARATION

OF MATERIAL

MASTERY OF CONCEPT ATTAINMENT MODEL (CAM) AND
PREPARATION OF MATERIAL.

3.0.0 INTRODUCTION:

This chapter is devoted to the preparational aspect of the study. The concept attainment model form the main treatment, whose effectiveness is being tested in this inquiry. In order to test the effectiveness of the Model, prior preparations have been made by the investigator. These preparation were:- (a) Acquire the Mastery of CAM (b) Preparation of lesson plan and (c) preparation of Tools.

3.1.0 BRIEF DISCRIPTION OF THE CAM:

Concept attainment model was designed by Bruce Joyce and Weil Marsha on the basis of the work of J.S. Bruner. It is meant for teaching different levels and types of concepts. The CAM facilitates the conceptual type of learning in contrast with rote learning. There are three variations of CAM, the first one is Reception CAM which is more direct in teaching students the elements of a concept. A second variation is the selection CAM which permits students to apply the conceptual activity more actively by using their own initiation

and control. The third variation is unorganized CAM, where the learner- transfers concept theory and attainment activity to a real life setting.

3.1.1 BRUNER'S VIEW ABOUT CONCEPT LEARNING:-

Bruner has described the processes by which people acquire concept on the basis of researches in his book 'A STUDY OF THINKING'. All types of concept learning depends upon nature of concepts which Bruner has given a 'Theory of Concept' and also described the thinking strategies used by learners in order to acquire concepts.

(1) THEORY OF CONCEPT :-

Bruner sees any concept as having five elements:

- (a) Name (b) Example (Positive, Negative). -
- (c) Attribute (essential and non essential)
- (d) Attribute value and (e) Rule.

NAME :-

The name is a term given to a category, for example, fruit, plant and chair are all names given to a category.

EXAMPLE :-

The second element 'Example' referred to instances of a given concept. Those instances which possess a concept are called positive examples and those instances which do not possess the concept are called Negative examples.

ATTRIBUTE AND ATTRIBUTE VALUE:

Third and fourth elements of the theory of concepts are attribute and attribute value. Attributes are the common characteristics that cause to place example in the same category.

Bruner differentiated attributes of the concept in the following types :-

Those attributes are essential ones which play a role in distinguishing examples from non examples. The attributes that are often associated with the concept but does not play a role in distinguishing examples from non-examples are called non-essential attributes.

The acceptable value range of an essential attribute of concept is called attribute value. For example, purple is out of the acceptable value range of colour for 'apples'. There are of course, certain concept whose attributes does not have a range of values.

The distinguishing attribute and their unique value range are called criterial attribute. If criterial attribute is missing from an object then the given object is an example of a different concept. These non-essential attribute in the examples which create difficulty in finding out the common essential attributes of concept are called Noisy attributes.

RULE :-

The sixth important element of a concept is a rule. It is a definition or statement specifying the essential attribute of a concept. A Rule normally evolves at the end of the concept attainment process.

3.1.2 (b) OBJECTIVES OF CAM :-

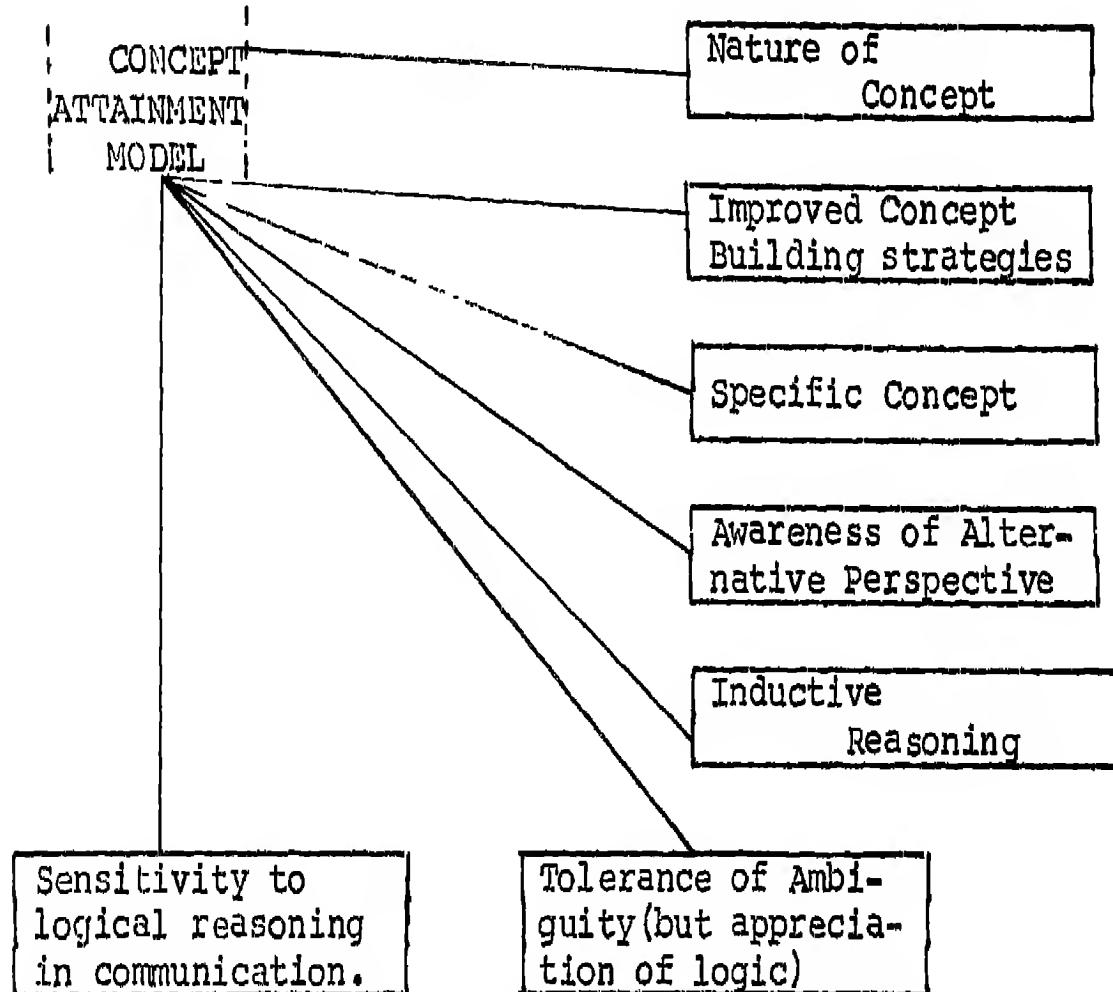
The CAM produces two types of effects: the instructional effects and nurturing effects. The major instructional objectives of CAM are : (a) to teach specific concept, (b) to understand the nature of concept, (c) to create awareness about thinking strategy and improve concept building strategies (d) to provide practice in inductive reasoning.

With abstract type of concept certain nurturing effects are also produced by the model. These are :
(a) an awareness of alternative perspectives, (b) a sensitivity to logical reasoning in communication and (c) tolerance of ambiguity.

TABLE - 3.1 DIAGRAMMATICAL REPRESENTATION FOR OBJECTIVES OF CAM.

_____ Instructional

----- Nurturant



3.1.3 (C) SYNTAX OF CAM :

The syntax of the model describes the model in action, it describes the sequence of the activities (Phases) which teachers have to do by using the model.

Syntax of Reception concept attainment model as follows:-

1. PHASE ONE : Presentation of Data and Identification of Concept.

It involves presenting data to the learner each unit of data is a separate example or non-example of the concept.

The examples are presented in a pre-arranged order and labelled 'YES' or 'NO'. The learners are informed that there is an idea or concept that all the positive examples have in common; learners are asked to compare and justify the attributes of the different example. Their task is to develop a hypotheses about the concept.

2. PHASE TWO : Testing Attainment of Concept :

The students test their attainment of the concept, first by correctly identifying additional unlabelled examples of the concept and their by generating their own exemplars.

3. PHASE THREE: The Analysis of Thinking Strategies :

In this phase students begin to analyse the strategies by which they attain concept. The learners

can describe their patterns, whether they focused on attribute or concept; whether they did so one at a time or several at once; and what happened when their hypothesis was not confirmed. Did they change strategies ? Gradually, they can compare the effectiveness of different strategies.

3.2.0 MASTERY OF THE CAM :

In order to acquire mastery of the CAM, the investigator had followed training strategy as developed by Bruce Joyce and Weil Marsha. This training strategy comprises of four components :

- a) Describing and understanding the Model.
- b) Viewing the model.
- c) Planning of Lessons.
- d) Adopting the Model.

Out of these four components, fourth one was not included as a part of the training taken by the investigator; because it concerned with the reformulation of curriculum according to the Model. The first three components of training strategy can be grouped into two main classes.

- a) Theoretical understanding of the CAM
- b) Application of theory in Practice.

3.2.1 THEORETICAL UNDERSTANDING OF THE CAM :

Prior to actual preparation of lesson plans according to CAM, the investigator had thoroughly read the theoretical part of the model. The main steps required for theoretical understanding were :

- a) To understand Bruner's view about concept learning.
- b) To know instructional goal of the CAM.
- c) To learn the syntax of the model.
- d) To evaluate understanding about CAM.

First part of the training strategy is understanding the model and related concepts. Those specific related terms are : Theory and Overview, Goals and Assumptions, Categorizing, Concept Formation and Concept Attainment, Theory of concepts, Analyzing thinking strategies for attaining concepts, Concept attainment as a Model of Teaching. The Teacher's Role, Taking theory into action, Elements of a concept, types of concepts and Distinguishing concepts from other types of content.

Preparation of Lesson Plans :

The investigator had taught Vth standard students through CAM. For this, investigator had prepared lessons plans exactly on the lines of lesson plan guide (LPG) available in the package prepared by

Weil Marsha and Bruce Joyce (1978). The broad outline of this lesson plan guide (LPG), are as follows :

1. Analysis of Concept
2. Name of the concept
3. Essential attributes
4. Non-Essential attributes
5. State the rule
6. Type of concept
7. Behavioural objectives
8. Describe 'YES' examples
9. Describe 'NO' example
10. Presentation
11. Phases of the Model
12. Questions that will elicit response from student.

The topics for the lesson plans were selected from the Middle standard science book. The overview of the eight lesson plan is given as under :-

TABLE 3.2 : The Overview of the Lesson Plan

S.NO.	CONCEPT	SELECTED EXAMPLES		DURATION
		POSITIVE EXAMPLE	NEGATIVE EXAMPLE	
1	2	3	4	5

1	2	3	4	5
1.	Acids :			
a)	Definition	1. Different type of Acids.	1. Water	35 Minutes.
b)	Identification	2. Orange	2. Different type of Bases.	
		3. Grapes	3. Banana.	
2.	Hydrochloric Acid and its Properties.	1. Water	1. Methane	35 Minutes.
		2. Chloroform	2. Methane	
		3. Ammonium Chloride.	Chloride	
			3. Sodium Hydroxide	
			4. Calcium Carbonate	
3.	Sulphuric Acid and its Properties	1. Gipsum	1. Water	35 Minutes.
		2. Oleum	2. Ammonium	
		3. Copper Sulphate	Bi Carbonate	
			3. Hydrochloric Acid.	
4.	Nitric Acid and its Properties	1. Plastic	1. Citric Acid	35 Minutes.
		2. Nitrous Acid	2. Calcium Carbonate	
		3. Manure	3. Ammonium Chloride.	
5.	Base	1. Calcium Hydroxide	1. Potash Alum	35 Minutes.
		2. Potassium Hydroxide	2. Baking Powder	
		3. Sodium Hydroxide	3. Washing Soda	

1	2	3	4	5
6.	Sodium Hydroxide & its properties	1. Air 2. Soap 3. Plastic	1. Sulphuric Acid 2. Potash Alum 3. Common Salt	35 Minutes
7.	Calcium hydroxide & its properties	1. Calcium Carbonate 2. Air.	1. Plastic 2. Soap 3. Acids	35 Minutes
8.	Salts	1. NaCl 2. Washing Soda 3. Potassium Nitrate	1. Acids 2. Bases 3. Gases.	35 Minutes

3.3.0 (d) Preparation of Tools :

One tool, namely Attainment Test for Selected Concept of Science (ATSC) is used.

3.3.1 ATTAINMENT TEST FOR SELECTED CONCEPTS OF SCIENCE (CHEMISTRY) (ATSC) :

It consisted of forty items of which 38 are multiple choice type and two are short answer type of items. The first draft of this achievement test comprises of forty multiple choice type of items. This draft was administered to six students studying in Middle standard of different schools other than the sampled schools. On the basis of experience from the responses of these students, two items were converted to short answer type of items. The content validity of the test were worked out by consulting teachers of the sampled school. The reliability of the test could not be worked out due to shortage of time.

CHAPTER - IV

RESULTS & DISCUSSION

4.0.0. INTRODUCTION :

This chapter is devoted to the results obtained by administering Achievement Test (Attainment Test for selected concepts of Science i.e. Chemistry) to the Experimental and control groups. The results are given in accordance to the objective and hypothesis of the study. The hypothesis is :

There will be no significant difference between the mean achievement scores of the science students taught through the CAM vis-a-vis-Traditional Method.

4.1.0. RESULTS RELATED TO HYPOTHESIS :

As described in chapter II the first objective of the study is, to find out the effectiveness of RCAM in terms of concept attainment of students. According to this objective the ATSC was administered to Experimental and Control Groups. The ATSC is comprised of forty items having thirty eight multiple choice and two short answer type.

The itemwise number of correct responses and their percentage are given in Table - 4.1.

TABLE - 4.1 : ITEMWISE NUMBER OF CORRECT RESPONSES AND THEIR PERCENTAGE FOR THE EXPERIMENTAL AND CONTROL GROUPS.

EXPERIMENTAL GROUPS (N = 40)			CONTROL GROUPS (N = 30)	
ITEM NO	NUMBER OF CORRECT RESPONSE	PERCENTAGE OF CORRECT RESPONSE	NUMBER OF CORRECT RESPONSE	PERCENTAGE OF CORRECT RESPONSE
1	2	3	4	5
1	35	87.5	2	6.66
2	25	62.5	5	16.60
3	11	27.5	5	16.60
4	17	42.5	4	13.33
5	40	100	8	26.60
6	29	72.5	6	20.00
7.	11	27.5	5	16.60
8	16	40.0	5	16.66
9	35	87.5	1	3.33
10	16	40.0	5	16.66
11	38	95.0	4	13.33
12	29	72.5	4	13.33
13	16	40.0	2	6.66
14	8	20.0	4	13.33
15	20	50.0	1	3.33
16	28	70.0	4	13.33
17	12	30.0	5	16.66
18	21	52.5	10	33.33
19	10	25.0	0	0.00
20	13	32.5	0	0.00
21	11	27.5	2	6.66
22	28	70.5	5	16.66
23	17	42.5	2	6.66
24	11	27.5	3	10.00
25	14	35.0	2	6.66
26	14	35.0	2	6.66
27	28	70.0	5	16.66
28	34	85.0	0	0.00

Contd.....

1	2	3	4	5
29	21	52.5	0	0.00
30	16	40.0	2	6.66
31	25	62.5	0	0.00
32	19	47.5	0	0.00
33	25	62.5	3	10.00
34	15	37.5	3	10.00
35	12	30.0	4	13.66
36	28	70.0	0	0.00
37	19	47.0	0	0.00
38	23	57.5	1	3.66
39	27	67.5	1	3.66
40	28	70.0	0	0.00

Range :	8 to 40	Percentage	Range :	0 to 10	Percentage
Mean :	22.67	of	Mean :	3.73	of
S.D. :	5.57	Range :	S.D. :	2.95	Range :
N :	40	20 to 100%	N :	30	0 to 33.33%

The Table 4.1 gives information about the level of attainment of experimental and control groups. The scores of the Experimental group on Attainment Test for selected concepts of Science (Chemistry) (ATSC) ranges from nine to forty and that of Control Group from zero to ten. It is also noticed that the Mean attainment of experimental group is 22.67 and that of Control Group is 3.73. The significance of difference between these means have been worked out and the results are presented later in this caption.

If the correct scores and their percentages are analysed in terms of various elements of concept, the following observation and conclusion can be drawn :

1. Item No. 5, 3, 6, 7, 9, 13, 17, 25, 29, 31, 36, 40 measure essential attributes. That is the correct scores and their percentage on these items indicate about the understanding of the essential attributes of concepts. Out of these twelve items, 70% of pupils answered correctly on seven items, while on rest of the five items 30 to 50% of pupils answered correctly. Keeping 70% attainment as Mastery Level, one can conclude that pupils acquire mastery level on 58% of the concepts measured in these items. It also means all pupils could not understand the essential attributes of the concepts.
2. Item No. 7, 8, 4, 14, 19, 26, 30 and 35 assess non-essential attribute. The scores and their percentage on these items indicate about the understanding of pupils, the term 'non essential attribute'. On all eight items, pupil scores ranges from 20 per cent to 42 per cent. Keeping 70 per cent attainment as mastery level, one can conclude that pupils could not acquire mastery on any one item. It mean pupils not understood the term 'non essential attribute'.

3. Item number 10, 12, 16, 21, 27, 31 and 39 assess the understanding of pupils about 'positive example'. Out of these eight items on five items 70 percent of pupils answered correctly. On rest of three items, their percentage ranges from 28 percent to 62 percent. So one can say that pupils acquire mastery level on 64 per cent of items which is quite close to 70 percent, mastery level. It means pupils understand the term 'positive example'.

4. Item number 15, 20, 23, 24, 25, 33, 35, 37, 38- the test understanding of pupils about 'negative example'. The percentage of pupils correct answer on these nine items ranges from 30 per cent to 57 per cent. Keeping 70 per cent attainment as mastery level, one can conclude that pupils could not acquire mastery on these items. It means pupils feel difficulty in differentiating non-examples from examples.

5. Items number 2 and 18 assess the defining ability of pupils in terms of essential attribute. Pupils could not acquire mastery.

From this observation one can conclude that pupils acquire mastery only on two were elements of concept, namely, positive example and essential attribute. According to J.S. Bruner identification of non-essential attribute, from negative example is quite difficult

and it is second level of conceptual understanding. Since in the present study pupils were exposed to treatment for a short time, it was not possible for them to attain second level understanding. It means that of the treatment is increased more examples can be given the second level of conceptual learning also takes place.

From this table, it is also noticed that in case of most of the test items, the experimental group produced higher percentage of correct response than the control group. It is also observed that even 20 per cent of control group pupils could not answered correctly on any one item. Keeping this in view it may be said that CAM was more effective than traditional teaching for teaching science concept to VII grade-children.

TABLE - 4.2 : SIGNIFICANCE OF DIFFERENCE BETWEEN MEAN SCORES ON THE ATSC FOR THE EXPERIMENTAL AND CONTROL GROUPS.

MEAN	S.D.	N	SEM	SED	t	df
22.67	5.57	40	0.98	0.69	22.57	68
3.73	2.95	30				

Table 4.2 shows that the mean performance of the experimental group is 22.67, whereas the Control group has attain a mean scores of 3.73. The 't' value between

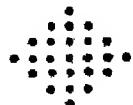
the mean is significant at 0.01 level. Further the over all mean performance on the ATSC of the experimental group is significantly higher than that of the control group. It may be said that treatment CAM was much more effective in the attainment of science concept for Middle Grade children.

4.3.0 CONCLUSIONS :

On the basis of results and the following conclusion are drawn. These conclusions are generalizable to the extent of the representativeness of the sample and the accuracy of methodology employed in the study. The main conclusion is presented here in accordance with the hypothesis of the study.

THE HYPOTHESIS :

"There will be no significant difference between the mean achievement scores of the science student taught through the concept Attainment Model (CAM) vis-a-vis iraditional Method". So to test the tentability of this hypothesis means, SDs and 't' value are worked out to test the significance of mean differences the 't' value is significant at .01 level. Thus we can say that mean achievement score of experimental group is higher than that of control group. Hence Null Hypothesis is rejected.



CHAPTER - V
SUMMARY

5.0.0

INTRODUCTION:

In the earlier chapters, the details related to various aspects of this study have been discussed. In this chapter the study is presented in brief.

Reviewing various studies in the area of conceptual learning. Gregory (1981) Ettayab (1981) Clance (1980) Prapradee (1980) Shirlug (1980) - Anthony Shovdon (1980) Tenner (1980) Josephe (1980) and Eenneth (1981), one may say that (a) Attainment of science concept were negligibly studied, (b) Sample used for these studies were mostly from college level; (c) Findings of these studies did not indicate any definite trend and (d) It is not clear whether these studies were conducted following the guidelines developed by Bruce-Joyce and Weil (1980).

Keeping all these points in mind, it was felt that there is need to conduct a study to test the effectiveness of CAM upon attainment of science concepts by Middle children. The present study is a step in this direction.

5.1.0 THE PRESENT STUDY :

The present study deals with the effectiveness of concept Attainment Model (CAM) in terms of pupils achievement. The effectiveness of the CAM was tested through the following question.:

What is the effect of the CAM on pupils achievement ?

5.2.0 OBJECTIVE :

"To findout the effectiveness of CAM in terms of concept attainment of student".

5.3.0 HYPOTHESIS :

On the basis of above objective the following hypothesis was formed :

There will be no significant difference between the mean achievement scores of the science student taught through CAM vis-a-vis traditional method.

5.4.0 METHOD AND PROCEDURE :

Procedure :

The present study was conducted in two stages :

- a) Acquiring Mastery over the CAM, (b) Studying the effectiveness of CAM in terms of pupil attainment of science concepts. The procedure regarding mastery of CAM involves namely : Theoretical understanding of Reception concept Attainment Model and Developing lesson plans according to lesson plan guide (LPG).

The second stage of the study involves the final experiment having (1) Design (2) Sample (3) Tools (4) Data Collection and (5) Statistical Analysis.

5.4.2

DESIGN OF THE STUDY :

The second stage of study aimed at findings out of the effectiveness of CAM for this purpose Post Test Parallel Group Design was used. The two groups, namely Experimental and Control groups were formulated. The experimental group was picked up from one school and the Control group was picked up from the other school. The treatment was assigned randomly.

5.4.3

SAMPLE :

The sample of the present study consisted of seventy school children. They are from two different schools of Rohtak City. These Schools were :

1. SHIVA PUBLIC SCHOOL (SPS), ROHTAK
2. VAISH PUBLIC SCHOOL (VPS), ROHTAK

The treatment was assigned randomly. Accordingly group of students from 'SHIVA PUBLIC SCHOOL' was termed as Experimental group and students of 'VAISH PUBLIC SCHOOL' was called control group.

5.4.4

TOOLS :

One tool, namely, Attainment Test for selected science concept (ATSC) was prepared.

The ATSC consisted of forty items; thirty eight of multiple choice type and two are short answer type. These items represented various elements of different

concepts.

5.4.5 DATA COLLECTION :

The procedure followed in the data collection was completed under the following steps :

- a) Creating awareness about the CAM,
- b) In order to explain, the phases of the CAM a lesson was demonstrated.
- c) For strengthening learning about the CAM a demonstration lesson with thorough explanation was given.
- d) Eight lessons were taught through the CAM.
- e) The ATSC were administered to the concerned groups.

5.5.0 FINDINGS :

On the basis of the analysis of the results, hypothesis was rejected. The finding can be summarised as follows :

Overall mean performance, on ATSC of the Experimental group is significantly higher than that of the Control Group.

5.6.0 IMPLICATION :

Results of the present study are positive, that is the CAM is an effective method for teaching science

concepts. Based upon these results, the following implication can be made :

- i) Preservice and Inservice teachers may be trained according to the CAM.
- ii) Science concepts of higher classes as well as lower classes may also be taught through the CAM.
- iii) Plenty of lesson plans of different subjects may be planned according to the CAM, so that this method gets further validation.
- iv) Efficient teacher educators may also be made available at different places of orientation to strengthen training colleges.

5.7.0 SUGGESTION :

Based upon this study the following suggestions are made :-

- i) There is need to study the attainment of relational and disjunctive types of concepts.
- ii) The available training package may be translated in Regional Languages and its effectiveness be studied upon.
- iii) Other dependent measures, such as, conceptual level, thinking pattern, specific criterion out comes, Feasibility of model at school and college level, may also be studied.
- iv) Other variation of the CAM, namely selection CAM, and unorganized material model may also be studied in similar ways.
- v) Adaptation of model as one of the component of training package could not be considered in the present study due to shortage of time. Continuous research may be conducted.
- vi) A follow-up research is needed to find out to what extent, the new method of attaining the concept helps to sustain these concepts.

* B I B L I O G R A P H Y *

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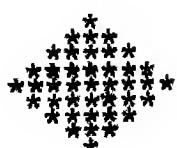
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40	WANDT EDWIN BROWN W.	ESSENTIALS OF EDUCATIONAL EVALUATION, 1957, HOLT RINENARI AND WINSTON, AMERICA.



APPENDIX

पाठ योजना क्रमांक - ।

४१३१ संकल्पना का विश्लेषणः-

४१३२ संकल्पना का नामः-

अम्ल अम्लो की पहचान

४१३३ संकल्पना के आवश्यक गुणः-

४१३४ अम्ल स्नाद में लट्टे होते हैं ।

४१३५ अम्ल नोने लिटमस को लाल कर देते हैं ।

४१३६ अम्ल पांसुआ के साथ क्रिया करके हाइड्रोजन गैस बनाते हैं ।

४१३७ अम्ल कार्बोनेटों को विच्छेदित करके कार्बनडाइआक्साइट गैस बनाते हैं ।

४१३८ ये देशों के साथ क्रिया करके लवण तथा पानी बनाते हैं ।

४१३९ संकल्पना के अनावश्यक गुणः-

४१४० अम्लों के प्रकार ४१३६ गंध ४१३७ अंग

४१४१ संकल्पना की परिभाषा:-

वे रासायनिक पदार्थ जो जल में विभाजित होकर हाइड्रोजन आयन प्रोटान उत्पन्न करते हैं अम्ल कहलाते हैं ।

४१४२ संकल्पना का प्रकारः- संयोजक

४१४३ रासायनिक उद्देश्यः-

४१४४ छात्र इस नये संकल्पना को देखकर अम्ल के आवश्यक व सामान्य गुणों को समझ सकें ।

४१४५ छात्र इस नये संकल्पना को अपने शब्दमें में परिभाषित कर सकेंगे ।

४१४६ छात्र इस पाठ में अनामांकित उदाहरणों के स्पष्ट रूप से पहचान सकेंगे ।

४१४७ उदाहरणः- ४१३६ "हाइड्रोजन" उदाहरण का विवरणः-

४१४८ विभिन्न प्रकार के फल - नीबू, लंतरा, सेब, हमली,

४१४९ दही

४१५० सल्पायूरिक अम्ल, हाइड्रोक्लोरिक अम्ल, नाइट्रिक अम्ल ।

४१५१ "नहीं" उदाहरण का विवरणः-

४१५२ केला

४१५३ सोडियम हाइड्रोक्साइट

४१५४ कैल्शियम हाइड्रोक्साइट

४१५५ पानी

४१५६ प्रस्तुतिकरण करने का तरीका :-

११। प्रदर्शन के द्वारा १२। चित्रों के द्वारा

१३। प्रश्नः— क्या पर्याप्त मात्रा में हाँ या नहीं के उदाहरण लिये हैं ?

उत्तरः— “हाँ” ।

प्रश्नः— ऐसे कितने “नहीं” उदाहरण हैं जिसे एक भी आवश्यक गुण नहीं है ?

उत्तरः— “तज्ज्ञ” ।

प्रश्नः— ऐसे कितने “नहीं” उदाहरण हैं जिसमें एक या एक से अधिक आवश्यक गुण है ?

उत्तरः— “एक” ।

१४। प्रतिमान की अवस्था:-

१५। प्रथम अवस्था : बच्चों आज हम एक खेल खेलेंगे इसमें मैं आपके तामने कुछ उदाहरण रखा है। आप को उदाहरण के आगे “हाँ” और “नहीं” लिखा हुआ मिलेगा। आप उन उदाहरणों में से गुणों के आधार पर “हाँ” उदाहरण और “नहीं” उदाहरण को छालग करते हुए “हाँ” उदाहरण को अपने विचार में सम्मिलित करना, व संकल्पना बनानी है।

१६। द्वितीय अवस्था:- अध्यापिका बच्चों को अनामोकित उदाहरण प्रस्तुत करेंगी उसके बाद छात्रों के स्वर्ग के उदाहरण उसी संकल्पना से सम्बन्धित हों, पूछेंगी।

१७। तृतीय अवस्था:- बच्चों से संकल्पना तक पहुंचने में किन-किन विचार प्रक्रिया का उपयोग किया उसके बारे में पूछेंगी। इसके लिए अध्यापिका पाठ को पुनः दोहरायेंगे और प्रत्येक उदाहरण के लिए छात्रों ने कैसे सोचा है उसके बारे में पूछेंगी।

१८। प्रश्न जो कि छात्र स्वयं पूछेंगे:-

१। दहों में कौन सा अम्ल होता है ?

२। नोबू, लेब, ब्लूर, जैं कौन सा अम्ल होता है ?

३। हाइड्रोक्लोरिक अम्ल के क्या उपयोग है ?

४। इंग बनाने व रेशम व विस्फोटक पदार्थ में किस प्रकार का अम्ल प्रयोग में आता है ?

१. के । संकल्पना का विश्लेषण:-

अ१ संकल्पना का नाम:- हार्ड्वेकलोरिक अम्ल

ब२ संकल्पना के आवश्यक गुण

३४ हार्ड्वेजन २४ क्लोरान ३४ रंगहीन

४४ दम घोटने वाली गन्ध ५४ जल में घुलनशील

६४ द्वारा से भारी ७४ स्वाद में छेद्या

८. नाले लिटमस को लाल

९. संकल्पना के अनावश्यक गुण:-

१४ पानो २४ अम्लों के प्रकार

३४ नाले लिटमस में परिवर्तन

८४ संकल्पना को परिभाषा:-

वह रासायनिक पदार्थ जो विधोजित होकर हार्ड्वेजन आयन स्वं प्लोराईड आयन देता है। इसका रासायनिक सूत्र हार्ड्वेजन क्लोरार्ड्ड (HCl) है और इसे नमक का अम्ल भी कहते हैं।

६४ संकल्पना का प्रकार :- संयोजक

ग२ व्यवहारिक उद्देश्य:-

अ२ छात्र इस नए संकल्पना को देखकर हार्ड्वेकलोरिक अम्ल को आवश्यक गुणों द्वारा समझ सकेंगे।

ब२ छात्र इस नए संकल्पना को अपने शब्दों में परिभाषित कर सकेंगे।

स२ छात्र इस पाठ में अनामोक्त उदाहरण को स्पष्ट रूप से पहचान सकेंगे।

घ२ उदाहरण:- अ२ हो उदाहरण का विवरण:-

१२ पानो २. क्लोरोफाम ३. अमोनियम क्लोरार्ड्ड

3। नहौं उदाहरण का विवरणः-

1। मीथेन

2। मीथेन पलोराईड

3। सोडियम हाइड्रोक्साईड

4। कैल्शियम कार्बोनेट

5। प्रस्तुतिकरण फर्मे का तरीका:-

प्रदर्शन के द्वारा

प्रृश्नः- प्रथा पर्याप्त मात्रा में "हा" या नहौं के उदाहरण लिए हैं ।

प्रश्नः- ऐसे कितने नहौं उदाहरण हैं जिनमें एक भी आकृयक गुण नहौं है ।

उत्तरः दो ।

प्रश्नः- ऐसे कितने "नहौं" उदाहरण हैं जिनमें एक या एक से अधिक आकृयक गुण हैं ।

उत्तरः- दो

प्रृश्नः प्रतिमान की अवस्था:-

1। प्रथम अवस्था:- बच्चों आज हम एक खेल खेलेंगे इसमें मैं आपके सामने कुछ उदाहरण रखूँगी । आपको उदाहरणों के आगे हाँ और नहौं लिखा हुआ फिलेगा । आप इन उदाहरणों में से गुणों के अधीर पर हाँ उदाहरण और नहौं उदाहरण को अलग करते हुये हाँ उदाहरण को अपने विचार में सम्मिलित करना, व संकल्पना बनानी है ।

2। द्वितीय अवस्था:- अध्यापिका बच्चों को अनामांकित उदाहरण प्रस्तुत करेंगी उसके बाद छात्रों के स्वयं के उदाहरणों उसी संकल्पना से सम्बन्धित हो, पूछेंगी ।

३। तृतीय अवस्था:- बच्चों से संकल्पना तक पहुंचने में किन किन विचार

प्रश्निया का उपयोग किया उसके बारे में पूछेंगी । इसके लिये

अध्यायिका पाठ को पुनः दोहरायेंगे और प्रत्येक उदाहरण के लिये

छात्रों ने कैसे सोचा है उसके बारे में पूछेंगी ।

४। प्रश्न जो कि छात्र सवयं पूछेंगे:-

१। हार्ड्सॉफ्टोविक अस्ल कैसे बनाया जाता है ।

२। क्या हार्ड्सॉफ्टोविक अस्ल मिथाईल और न्ज रंग को बदल देता है ।

३। हार्ड्सॉफ्टोविक अस्ल के क्या उपयोग है ।

पाठ योजना क्रमांक - ३

क्र० संकल्पना का विश्लेषण:-

अ० संकल्पना का नाम:- सल्फ्यूरिक अम्ल को परिभाषा व गुण

ध० संकल्पना के आवश्यक गुण:-

१० हार्ड्वोज़ २०० सल्फेट ३०० स्वाद में छटा

४० तीखी गन्ध ५०० रंगहीन ६० नीले लिटमस को लाल

संकल्पना के अनावश्यक गुण:-

१० पानो २० अम्लों के प्रकार

३० लिटमस में परिवर्तन

४० बेस

द० संकल्पना की परिभाषा:-

वह रासायनिक पदार्थ जो हार्ड्वोज़ आयन सर्वं सल्फेट आयन

देता है इस का रासायनिक सूत्र H_2SO_4 और इसे गन्धीक

का अम्ल भी कहते हैं ।

संकल्पना का प्रकार:- संयोजन

व्यावहारिक उद्देश्य:-

अ० छात्र इस नये संकल्पना को देखकर सल्फ्यूरिक अम्ल के आवश्यक

गुणों को समझ सकेंगे ।

ब० छात्र इस संकल्पना के दैनिक जीवन में क्या उपयोग है जान सकेंगे ।

स० छात्र इस संकल्पना को अपने शब्दों में परिभाषित कर सकेंगे ।

द० छात्र इस पाठ में अनामोंकित उदाहरण को त्पष्ट स्पष्ट से पहचान

सकेंगे ।

१५	उदाहरण हाँ हो उदाहरण का विवरण:-
१६	जिप्टर $\text{CaCO}_4 \cdot 2\text{H}_2\text{O}$
२५	ओमियम $\text{H}_2\text{S}_2\text{O}_7$
३५	कॉपर सल्फेट
४५	तोड़ियम हार्ड्सोजन सल्फेट
५५	नहीं उदाहरण का विवरण
१६५	अमोनियम बार्कार्बनेट
२६५	पानी
३६५	तोड़ियम ज्वारार्ड
४६५	कैल शीयम हार्ड्सोक्सार्ड
५६५	हार्ड्सोक्सोरिक अम्ल
६६५	पश्चु
७६५	प्रस्तुतिकरण करने का भरोका
१६५	प्रदर्शन के द्वारा २५ वित्रों के द्वारा
८६५	प्रश्न :- क्या पर्याप्त मात्रा में हाँ या नहीं के उदाहरण लिए हैं उत्तर हाँ ।
प्रश्न :-	ऐसे कितने नहीं उदाहरण हैं जिनमें एक भी आवश्यक गुण नहीं है
उत्तर :-	तीन
प्रश्न :-	ऐसे कितने नहीं उदाहरण हैं जिनमें एक या एक से अधिक आवश्यक गुण हैं ।
उत्तर	तीन
इ.	प्रतिमान की अवस्था
	प्रथम अवस्था :- छच्चों आज भी हम एक खेल खेलेंगे इसमें आपके

ताजे हों और नहीं से नामांकित उदाहरण प्रस्तुत करेंगी ।

अब हमें के आधार पर "हों" उदाहरण और "नहीं" उदाहरण की बात बताना चाहते हुए हों उदाहरण को आने विचार में सम्मिलित करिए । उसमें उपास्थित आवश्यक गुणों के आधार पर संकल्पना करें ।

१. वाक्याधार परिधि :- अध्यापिका छ्यों को अनामांकित उदाहरण प्रस्तुत करेंगी उसे बाद छात्रों के स्वयं के उदाहरण उसी संकल्पना से बनायेंगी हों, पूछेंगा ।

२. वाक्याधार परिधि :- छ्यों से संकल्पना तक पहुँचने में किन किन विचार द्वारा का उपयोग किया उसके बारे में पूछेंगी इसके लिये अध्यापिका पाठ से पुनः दौड़ायेंगी और प्रत्येक उदाहरण के लिये छात्रों ने ऐसी जावा है उसके बारे में पूछेंगी ।

३. अन्य जो कि छात्र पूछेंगे

१. क्या साम्पूर्चिक अम्ल का कोई रंग होता है ।
२. क्या साम्पूर्चिक अम्ल पानी में घुलनशील है ।
३. क्या साम्पूर्चिक अम्ल को गन्धक का अम्ल क्यों कहते हैं ।
४. क्या साम्पूर्चिक अम्ल प्रकाश के प्रति क्रियाशील है ।
५. साम्पूर्चिक अम्ल के क्या उपयोग हैं ।

पा० धोजा क्रमांक ४

फ० संकल्पना का विश्लेषण

अ० संकल्पना का नामः नाइट्रिक अम्ल परिभाषा
गुण

व० संकल्पना के अवश्यक गुण

१० डाईनोजन २५ नाइट्रेट ३५ गन्धेहीन

५० रंग पीलायस्वाद में खटा ६५ नीले लिटमस को लाल

सं० संकल्पना के अनावश्यक गुण

१५ पानो २५ अम्लों के प्रकार

३० वायु ५५ लाल लिटमस में परिवर्तन

८० संकल्पना की परिभाषा

वह रासायनिक पदार्थ जो जल में विधोजित होकर डाईनोजन आयन

स्वं नाइट्रेट आयन देता है इसका रासायनिक सूत्र HNO_3

और इसे शोरे का अम्ल भी कहते हैं ।

१५० संकल्पना का प्रकारः— संयोजक

१५१ ट्यूब्हारिक दृद्देश्यः—

अ० छात्र इस नस संकल्पना को अपने शब्दों में परिभाषित कर सकेंगे ।

५० छात्र स्पष्टतः व सही रूप से अनामांकित उदाहरण को पहचान

सकेंगे ।

८० प्रत्येक छात्र तीन नये उदाहरण बना सकेंगे ।

८५ प्रत्येक छात्र अपनी पाठ्य पुस्तक में से संकल्पना के तीन

उदाहरण, इन उदाहरण के अलावा पहचान सकेंगे ।

चू उदाहरण आ "हाँ" उदाहरण का विवरण

- 1 ए प्लाटिटक
- 2 ए खाद
- 3 ए नाइट्रेस अम्ल

आ॒ नहीं उदाहरण का विवरण

- 1 ए प्रियंका नाईट्रिट
- 2 कैल्शियम कार्बोनेट
- 3 पान।
- 4 ए अमोनियम फ्लोराइड
- 5 प्रत्युत्तिकरण करने का तरीका प्रदर्शन के द्वारा

प्रश्नः क्या पर्याप्त मात्रा में हाँ या नहीं के उदाहरण लिये हैं

उत्तरः हाँ

प्रश्नः ऐसे कितने नहीं उदाहरण हैं जिनमें एक भी आवश्यक गुण नहीं है

उत्तरः तीन

प्रश्नः ऐसे कितने "नहीं" उदाहरण हैं जिनमें एक या एक से अधिक आवश्यक गुण हैं।

उत्तरः एक

इँ प्रतिमान को अवस्था

- 1 ए प्रथम अवस्था:- बच्चों आजहम एक खेल खेलेंगे मैं आपके सामने कछ उदाहरण रखूँगी। आपको उदाहरण के आगे हाँ और नहीं लिखा हुआ मिलेगा। आप इन उदाहरण में से गुणों के आधार पर "हाँ" उदाहरण और "नहीं" उदाहरण को अलग करते हुये हाँ उदाहरण को अपने विचार में सम्मिलित करना, व संकल्पना बनानी है।

2४ दिनतीय अवस्था :- अध्यापिका बच्चों को अनामांकित उदाहरण प्रस्तुत करेंगी उसके बाद छात्रों के स्वयं के उदाहरण उसी संकल्पना से सम्बन्धित हो, पूछेंगी ।

3५ दैनिक अपस्था :- बच्चों से संकल्पना तक पहुँचने में किन किन विचार प्रक्रिया का उपयोग किया उसके बारे में पूछेंगी । इसके लिये अध्यापिका पाठ को पुनः दोहरायेंगी और प्रत्येक उदाहरण के लिये छात्रों ने कैसे तौचा है उसके बारे में पूछेंगी ।

प्रृष्ठपुरन जो फि छात्र स्वयं पूछेंगे :-

- १। नाईट्रोक अम्ल को शोरे का अम्ल क्यों कहते हैं
- २। नाईट्रिक अम्ल को प्रयोग में लाने के लिये क्या क्या सावधानियाँ भरतनी चाहिये
- ३। नाईट्रिक अम्ल के तवचा पर पड़ने से क्या होता है ।
- ४। नाईट्रिक अम्ल के क्या उपयोग हैं ।

पाठ योजना क्रमांक - 5

कहूँ	संकल्पना का विश्लेषणः	
अहूँ	संकल्पना कानामः क्षारक	परिभाषा

क्षारक की पहचान

खूँ संकल्पना के आवश्यक गुणः-

1. इन का स्वाद कड़वा होता है ।
2. ये तांबुज जैसे बिकने होते हैं और त्वचा को क्षति पहुंचाते हैं ।
3. ये लाल लिट्टमस को नीला कर देते हैं ।
4. ये हल्दी के रंग को भूरा लाल कर देते हैं ।

सहूँ संकल्पना के अनावश्यक गुणः-

1. क्षारक के प्रकार

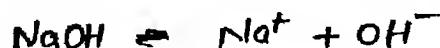
2. गन्ध

3. रौप्य

4. संकल्पना की परिभाषा

ये रासायनिक पदार्थ जो जल में वियोजित होकर हार्ड्वाक्साइड

हूँ O.H. हूँ के ग्रण आयन उत्पन्न करते हैं क्षारक कहलाते हैं जैसे:-



खूँ संकल्पना का प्रकारः- संयोजक

गूँ व्यावहारिक उद्देश्य

अहूँ छात्र इस नए संकल्पना को देखकर क्षारक या बेस के सामान्य

व आवश्यक गुणों को समझ सकेंगे ।

खूँ छात्र इस नए संकल्पना को अपने शब्दों में परिभाषित कर सकेंगे

सूर्य उत्तर इस पाठ में अनामांकित उदाहरण को स्पष्ट रूप से पहचान सकेंगे ।

मृत्यु उत्तर दैनिक जीवन में प्रयोग होने वाले क्षारक व बेस को पहचान सकेंगे ।

घास 1. उदाहरण:- ॐ "हाँ" उदाहरण का विवरण
लौटिष्ठम हार्द्धावसार्द्ध
2. सौडियम हार्द्धावसार्द्ध
3. पौटिष्ठम हार्द्धावसार्द्ध
4. बैकिंग पाउडर
5. फॉटो धोने का सोडा

आहा 1. नहाँ उदाहरण का विवरण
2. दून्ना
3. बॉटिंग धोने का सोडा
4. फिटकरी
5. पौटिष्ठम नार्थेट
6. सालुन
प्रस्तुतिकरण का तरीका:-

प्रदर्शन के द्वारा 2. चित्रों के द्वारा

प्रश्न, उत्तर क्या पर्याप्त मात्रा में हाँ और नहाँ के उदाहरण लिए हैं

उत्तर हाँ

प्रश्न: ऐसे कितने नहाँ उदाहरण हैं जिसमें एक भी आवश्यक गुण नहीं है

उत्तर एक

प्रश्न: ऐसे कितने नहाँ उदाहरण हैं जिसमें एक या एक से अधिक आवश्यक गुण हैं

उदाहरण

एक

प्र० १० :- ऐसे १५० ने "नहीं" उदाहरण है जिसमें एक या एक से अधिक आवश्यक गुण है ।

उदाहरण दोनों

११ प्रतिकान तो अवस्था :-

१२ पृथम अवस्था :- बच्चों आज हम एक खेल खेलेंगे इसमें मैं आपके सामने हूँ उदाहरण रखूँगा । आप गुणों के आधार पर "हाँ" उदाहरण और "नहीं" उदाहरण तो अलग अलग करते हुए "हाँ" उदाहरण को अपने विचार में सम्मिलित करते यह उसमें उपरित्यत आवश्यक गुणों के आधार पर संकल्पना बनाई दें ।

१३ द्वितीय अवस्था :-

अप्राप्यका बच्चों को अनामांकित उदाहरण प्रस्तुत करेंगी उसके बाद उन्होंने के स्थान के उदाहरण उसी संकल्पना से सम्बन्धित हो पूछेंगी ।

१४ तृतीय अवस्था :- बच्चों से संकल्पना तक पहुँचने में किन-किन विचार प्रश्निया का उपयोग किया उसके बारे में पूछेंगो । इसके लिए अध्यापिका पाठों को पुनः दोहरायेंगो और प्रत्येक उदाहरण के लिए छात्रों ने कैसे सोचा है उसे बारे में पूछेंगी ।

१५ प्रश्न जो कि छात्र पूछेंगे :-

१६ क्या क्षार पानो में धुलते हैं ।

१७ क्या सभी क्षारक हल्दी के रंग को लाल भूरा कर देते हैं ।

१८ क्या सभी क्षारक साफ़ा जैसे किन्हें होते हैं ।

पाठ योजना क्रमांक: 6

कृ. सैकल्पना का नाम सोऽियम हार्ष्ट्राक्षार्द्धं

अृ. सैकल्पना के आवश्यक गुणः—

१. चिकने

२. स्थाद में कड़वे

३. धूलनशील

४. गन्धीन

५. लाल लिठास को नौला कर देते हैं ।

घ. सैकल्पना के अनावश्यक गुणः—

१. पानो

२. ऐतों के प्रकार

३. पदार्थ की अवस्था

द४. सैकल्पना की परिमाणः

वे रासायनिक पदार्थ जो हार्ष्ट्राक्षार्द्धं आयन \neq 0H^- हैं

सर्वं Na^+ सोऽियम । आयन देता है । इसका रासायनिक गुण \neq अपैर उसे कास्टिक सोडा भी कहते हैं ।

छ. सैकल्पना का प्रकारः— संयोजक

गृ. व्यावहारिक उद्देश्य

१. छात्र त्यष्टवतः व सही रूप से अनामांकि उदाहरण को पहचान सकेंगे

२. प्रत्येक छात्र तीन नये उदाहरण बना सकेंगे ।

३. प्रत्येक छात्र अपनी पाद्य पुस्तक में सैकल्पना के तीन उदाहरण इन उदाहरण के अलावा पहचान सकेंगे ।

४. छात्र सैकल्पना के उदाहरण को देखेंगे और आवश्यक गुणों

के भूल्यों को वर्णन कर उन्हें नससकंल्पना में उपयोग कर सकेंगे ।

५. उत्तर सैकल्पना को परिभ्राष्टित करने में समर्थ होंगे ।

६. उदाहरण अ "हाँ" उदाहरण का विवरण ।

१६ वायु

२६ साहून

३६ प्लास्टिक

आ६ "नहीं" उदाहरण का विवरण

१६ हाईक्लोरिक अम्ल

२६ एफि फिटकरी

३६ एटेंशियम नाईट्रोइट

४६ मीठा सोडा ।

५६ घूना

इ६ प्रस्तुतिकरण करने का तरीका :-

प्रदर्शन के द्वारा

ई६ प्रश्न :- क्या पर्याप्त मात्रा में हाँ या नहीं के उदाहरण लिये हैं ।

उत्तर हाँ

प्रश्न :- ऐसे कितने "नहीं" उदाहरण हैं जिन में एक भी आवश्यक गुण नहीं है ?

उत्तर चार

प्रश्न :- ऐसे कितने नहीं उदाहरण हैं जिनमें एक या एक से अधिक आवश्यक गुण हैं ।

उत्तर एक

इ६ प्रतिमान की अवस्था

१. प्रथम अवस्था:- बच्चों आज हम एक छेल छेलेंगे इसमें मैं आपके सामने कुछ उदाहरण प्रस्तुत करूँगी । आपको उदाहरण के आगे हाँ और नहीं लिखा हुआ मिलेगा । आप उन द्वद्वाहरण में से गुणों के आधार पर "हाँ" उदाहरण और "नहीं" उदाहरण को अलग करते हुये "हाँ" उदाहरण को अपने विचार में सम्मिलित करना, व संकल्पना बनानी है ।

२। द्वितीय अवस्था:- अध्यापिका बच्चों को अनामांकि उदाहरण प्रस्तुत करेंगी उसके बाद छात्रों के स्वयं के उदाहरण उसी संकल्पना से सम्बन्धित हो पूछेंगी ।

३। तृतीय अवस्था:- बच्चों से संकल्पना तक पहुँचने में किन किन विचार प्रक्रिया का उपयोग किया उसके बारे में पूछेंगी । इसके लिए अध्यापिका पाठ को पुनः दोहरायेंगी और प्रत्येक उदाहरण के लिए छात्रों ने कैसे सोचा है उसके बारे में पूछेंगी ।

४। प्रश्न जो कि छात्र स्वयं पूछेंगे:-

१। सौडियम हार्ड्राक्सार्ड का रासायनिक सूत्र क्या है ।

२। क्या सौडियम हार्ड्राक्सार्ड पानी में धूलनशील है ।

३। क्या सौडियम हार्ड्राक्सार्ड हल्दी के रंग को लाल भूरा कर देता है ।

४। क्या सौडियम हार्ड्राक्सार्ड लाल लिटमस में परिवर्तन लाता है ।

पाठ योजना ग्रमांक - ४७४

१०१ तंकल्पना का विवरणः

अ१ तंकल्पना का नामः- लवण

अ२ तंकल्पना के आवश्यक गुणः-

१८ अम्ल २४ क्षार

३. पानी ५५ धातु

४२ तंकल्पना के अनावश्यक गुणः-

१६ अम्ल २१ पदार्थ को अवस्था

३५ अम्ल व क्षार के प्रकार ४. रंग

५२ तंकल्पना को पर्याप्तभाषा:-

ते राताधारानक पदार्थ जो अम्ल की बेस के साथ उदासीनीकरण

अभिक्रिया द्वारा बनते हैं जैसे $\text{NaOH} + \text{HCl} \rightarrow \text{NaCl} + \text{H}_2\text{O}$

आरेटक सोडा \rightarrow अम्ल \rightarrow सोडियम क्लोराइड \rightarrow + पानी

५२ अम्लसे तंकल्पना का प्रकार :- संयोजक

ग२ व्यावहारिक उद्देश्य :

अ१ छात्र इस नए संकल्पना को देखकर "लवण" के आवश्यक गुणों के द्वारा समझ सकेंगे ।

ब१ छात्र इस नए संकल्पना को अपने शब्दों में परिभाषित कर सकेंगे ।

स१ छात्र इस पाठ में अनामांकि उदाहरण को स्पष्ट रूप से पहचान सकेंगे ।

धृ उदाहरण ३३ "हा" उदाहरण का विवरण:-

- १३ साधारण नमक
- २४ क्युँके धोने का अचूक /सोडा
- ३४ फिटकरी
- ४४ पोटेशियम नाइट्रेट
- ५४ मीठा सोडा

आ४ "नहों" उदाहरण का विवरण:-

- १४ सोडियम हाइड्राक्साइड
- २४ हाइड्राक्लोरिक अम्ल
- ३४ पानी
- ४४ घूना

इ४ प्रस्तुतिकरण का तरीका:-

प्रदर्शन के द्वारा

प्रश्नः प्रश्नः क्या पर्याप्त मात्रा में हा या नहों के उदाहरण लिये हैं
उत्तरः हाँ

प्रश्नः ऐसे कितने नहों उदाहरण हैं जिनमें एक भी आवश्यक गुण नहों है

उत्तर तीन

प्रश्नः ऐसे कितने नहों उदाहरण हैं जिनमें एक या एक से अधिक आवश्यक गुण हैं ।

उत्तर एक

प्रतिमान की अवस्था

१४ प्रथम अवस्था:- बच्चों आज हम एक खेल खेलेंगे इसमें मैं आपके

सामने कुछ उदाहरण रखूँगी । आपको उदाहरण के आगे "हा" और "नहौं" लिखा हुआ मिलेगा । आप उन उदाहरणों में से गुणों के आधार पर "हा" उदाहरण और "नहौं" उदाहरणों को अलग करते हुये हा उदाहरण को अपने विचार गें सम्मिलित करना, व संकल्पना बनानी है ।

2४ द्वितीय अधस्था :- अध्यापिका बच्चों को अनामांकि उदाहरण प्रत्युत फूँगो उसके बाद छात्रों के स्वयं के उदाहरण उसी संकल्पना से सम्बन्धित हो पूछेंगी ।

3५ तृतीय अधस्था :- बच्चों के संकल्पना तक पहुँचने में किन फिन विचार प्रक्रिया पा उपयोग किया उसके बारे में पूछेंगी । इसके लिए अध्यापिका पाठ को पुनः दोहरायेंगी और प्रत्येक उदाहरण के लिए छात्रों ने कैसे सोचा है उसके बारे में पूछेंगी ।

च४ प्रश्न जो कि छात्र स्वयं पूछेंगे ।

1४ हमारे दैनिक जीवन में कौन कौन से लक्षण उपयोग में आते हैं

2४ लक्षण के भौतिक गुण कौन से हैं ।

3४ क्या लक्षण भी लिटमस में परिवर्तन लाते हैं ।

4४ क्या लक्षण भी धातुओं के साथ क्रिया करते हैं ।

स्वीकृति संकल्पना प्राप्ति प्रादर्श उपलब्धि

परोक्षण-पत्र

नाम पूरा

कृपा

आयु

दिनांक

जाति

पिता का नाम

गांधिक आय

पता :

समय : 40 गिनट

निर्देश है। नीचे दिस गए प्रश्नों के ३-४ सम्भावित उत्तर
पर गए हैं, उनमें से आप सही उत्तर को चुने और उसके सामने दिये गये
बा परे में सही का चिन्ह लगाना है।

2. एक प्रश्न को हल करने के लिये एक मिनट का समय दिया
गया है। अगर आपको किसी प्रश्न का उत्तर नहीं आस तो आप निःसंकोच
अगले प्रश्न पर पहुंच सकते हैं और अन्त में समय बचे तब आप उस प्रश्न का
उत्तर सोच सकते हैं।

3. सुधिधा व समझने को दृष्टि से एक उदाहरण नीचे दिया
गया है :-

प्रश्न :- हमारे जीवित रहने के लिए कौन सी जैसे आवश्यक होती है।

1. आपसीजन जैसे <input checked="" type="checkbox"/>	3. कार्बनडाइऑक्साइड जैसे <input type="checkbox"/>
2. नाइट्रोजन जैसे <input type="checkbox"/>	4. हाइड्रोजन जैसे <input type="checkbox"/>

उपरोक्त उदाहरण में नम्बर १। सही है कि जीवित रहने के लिए
आक्सीजन जैसे आवश्यक है। अतः सही का नियान आक्सीजन जैसे के सामने
बाले बाक्स में लगेगा।

1. अम्ल : -

कृ लाल लिटमस को नोला कर देते हैं

खृ नीले लिटमस को लाल कर देते हैं ।

गृ लिटमस के प्रति उदासीन होते हैं

धृ लाल लिटमस को भूरा पोला कर देते हैं ।

2. अम्ल का अर्थ है :-

कृ वे पदार्थ जो आक्सीजन आयन उत्पन्न करते हैं

खृ वे पदार्थ जो हार्ड्वॉक्साइड आयन उत्पन्न करते हैं

गृ वे पदार्थ जो हार्ड्वॉक्साइड आयन उत्पन्न करते हैं

धृ वे पदार्थ जो पानी उत्पन्न करते हैं

3. इनमें से अम्ल है

कृ पानी

ख. सल्प्यूरिक

गृ सोडियम हार्ड्वॉक्साइड धृ कैल्काइयम

होर्ड्वॉक्साइड

4. निम्नलिखित में से "अम्ल" के लिए कौन सा आवश्यक गुण है

कृ पानी

खृ सोडियम हार्ड्वॉक्साइड

गृ सल्प्यूरिक अम्ल

धृ नाईट्रिक अम्ल

5. अम्ल स्वाद में:-

कृ. मीठे होते हैं

खृ. छाटे होते हैं

गृ. कोई स्वाद नहीं होता है

धृ. कड़वे होते हैं

6. अम्ल धातुओं के साथ क्रिया करके:-

कृ. एर्ट्रोजन गैस बनाते हैं

खृ. आक्सीजन गैस बनाते हैं

गृ. कार्बनडाईक्साईड गैस बनाते हैं

धृ. पानी बनाते हैं

7. हार्ड्वोरिक अम्ल को:-

कृ. शोरे का अम्ल भी कहते हैं

खृ. गन्धक का अम्ल भी कहते हैं

गृ. नमक का अम्ल भी कहते हैं

धृ. चीनी का अम्ल भी कहते हैं

8. हार्ड्वोकलोरिक अम्ल का रासायनिक सूत्र

1. H_2SO_4

2. HCl

3. HNO_3

4. H_2CO_4

 है।

9. कौन सा अम्ल प्रयोग ज्ञाता गैं अनिकारक के रूप में प्रयोग किया जाता है :

कृ. सल्फ्यूरिक अम्ल

खृ. हार्ड्वोकलोरिक अम्ल

गृ. नाइट्रिक अम्ल

घृ. पानी

10.

1. विद्युत का सुधारक

2. फुर्यांगक



कौन सा अम्ल रेक्षा करता है:-

कृ. सल्फ्यूरिक अम्ल

खृ. हार्ड्वोकलोरिक अम्ल

गृ. पानी

घृ. नाइट्रिक अम्ल

11. साल्फोर्मिक अम्ल का रासायनिक सूत्र :-

कृष्ण H_2SO_4

द्वितीय HCl

गृहीत H_2CO_3

धूम्र H_2O

12. पानी में गन्धी का अम्ल मिलाने से -----उत्पन्न होतो है ।
कृष्ण उष्मा, रोशनी, दण्डक, गर्मी

13. गन्धी के अम्ल के लिये अनावश्यक गुण है ।

कृष्ण नौले लिटमस को लाल करते है

द्वितीय धूम का रंग छाला भूरा है

गृहीत धूमको गन्ध तोड़ती है

धूम्र पानी

14. गन्धी का अम्ल

कृष्ण लाल लिटमस को नौला कर देता है

द्वितीय नौले लिटमस को लाल कर देता है

गृहीत उदासीन है

धूम्र लाल लिटमस को भूरा लाल कर देता है

15. शोरे का अम्ल भी इस अम्ल को कहते हैं।

क्रू सल्फूरिक अम्ल

खू नाईट्रिक अम्ल

ग्रू पानी

घू वाईक्सो ग्लोरिक अम्ल

16. वायु में थोड़ी सी मात्रा में कौन सा अम्ल होता है।

क्रू H_2SO_4

खू HNO_3

ग्रू O_2

घू HCl

17. नाईट्रिक अम्ल के कोई दो आवश्यक गुण लिखो।

क्रू _____

खू _____

18. नाईट्रिक अम्ल के कौन कौन से अनावश्यक गुण हैं कोई दो गुण लिखो

क्रू _____

खू _____

19. यह $ZnCO_3 + \text{_____} \rightarrow Zn(NO_3)_2 + H_2O + CO_2$

कौन सा अम्ल कार्बनेट के साथ क्रिया करता है।

1. HNO_3 2. H_2O 3. H_2SO_4 4. HCl

20. कौन से अम्ल के त्वचा पर लग जाने से पौले धब्बे बन जाते हैं ।

कृष्ण सल्फ्यूरिक अम्ल

लंबू नाईट्रिक अम्ल

गंगू हाईड्रोक्लोरिक अम्ल

धूरू कैल्चियम हाईड्रोक्लोराइड

21. क्षारः-

कृष्ण पत्थर जैसे कठोर होते हैं ।

खूरू साफ्ऱन जैसे धिकने होते हैं

गंगू न कठोर होते हैं न नरम

धूरू धोड़े से कठोर व धोड़े से नरम होते हैं

22. क्षार का अर्थ हैः-

कृष्ण वे पदार्थ जो हाईड्रोजन आयन उत्पन्न करते हैं

खूरू वे पदार्थ जो आ॒क्सी॑जन आयन उत्पन्न करते हैं

गंगू वे पदार्थ जो हाईड्रोक्लोराइड आयन उत्पन्न करते हैं

धूरू वे पदार्थ जो पानी बनाते हैं

23. क्षार स्वाद में

कृ मोठे होते हैं

खूँ कहवे होते हैं

गूँ खट्टे होते हैं

घूँ कोई स्वाद नहीं लोता

24. क्षार हल्दी के रंग को :-

कृ हरा कर देते हैं

खूँ भूरा लाल कर देते हैं ।

गूँ लाल कर देते हैं

घूँ कोई रंग नहीं बदलता

25. क्षार :-

कृ लिटमस को प्रति उदासीन होते हैं

खूँ नीले लिटमस को लाल कर देते हैं

गूँ लाल लिटमस को नीला कर देते हैं

घूँ दोनों लिटमस के साथ सक ला रंग देते हैं

26. इनमें क्षार :-

क्र० सल्फूयूरिक

ख० कैल्चियम हार्ड्राक्सार्ड

ग्र० पानी

घ० चूना

27. सोडियम हार्ड्राक्सार्ड का रासायनिक सूत्र

क्र० NaOH

ख० KOH

ग्र० H_2O

घ० $\text{Ca}(\text{Cl})_2$

28. सोडियम हार्ड्राक्सार्ड पानी में :-

क्र० तैरता रहता है

ख० शीघ्रता से धूल जाता है

ग्र० नहीं धूलता है

घ० कुछ कुछ धूल जाता है

29. सोडियम हार्ड्राक्सार्ड के दो आवश्यक गुण लिखो :-

क्र० _____

ख० _____

30. "नहाने के साबुन" बनाने में प्रयोग होता है ।

कृ. कैलिशियम हाईड्राक्साइड

खृ. पॉटेशियम हाईड्राक्साइड

गृ. सोडियम हाईड्राक्साइड

घृ. सल्फूरिक अम्ल

31. कैलिशियम हाईड्राक्साइडरंग में:-

1. लपेच होता है ।

2. रंगहीन होता है

ग. भूरा रंग

घ. मिट्टी जैसा रंग

32. अम्ल बैस के साथ क्रिया करके बनाते हैं

कृ. लवण और पानी बनाते हैं

खृ. हाईड्रोजन गैस उत्पन्न करते हैं

गृ. कार्बनडाइआक्साइड गैस उत्पन्न करते हैं

घृ. पानी बनाते हैं

33. साधारण नमक किस का उदाहरण है ।

क्र०	अम्ल	<input type="text"/>
ख्र०	क्षार	<input type="text"/>
ग्र०	लवण	<input type="text"/>
घ्र०	पानी	<input type="text"/>

34. डिवलरोटी बनाने में किस का प्रयोग किया जाता है ।

क्र०	मोठा सोडा	<input type="text"/>
ख्र०	पोटेशियम नाईट्रेट	<input type="text"/>
ग्र०	फिटकरो	<input type="text"/>
घ्र०	साधारण नमक	<input type="text"/>

35. सामान्य जीवन में उपयोग आने वाले कुछ लवणों के नाम बताओ

क्र०	_____	ख्र०	_____
ग्र०	_____	घ्र०	_____

36. पदार्थ "स" पोटेशियम हाईक्रोक्सार्ट्रिक और हाईड्रोक्लोरिक अम्ल की क्रिया से बना है इसका विलयन लिटमस के प्रति उदासीन है

पदार्थ "स" क्या है:-

क्र०	KCl	<input type="text"/>
ख्र०	H ₂ O	<input type="text"/>
ग्र०	K ₂ SO ₄	<input type="text"/>
घ्र०	NaCl	<input type="text"/>

37. निम्नलिखित आवस्थाओं के आगे छाली स्थान पर लिखो कि ये किस प्रकार के आवश्यक हैं :-

क० Na_2O -----
 छ० Ca_2 -----
 ग० CaO -----
 घ० CO -----

38. छाली स्थान भरो :-

क० ----- आवश्यक फेवल धारुओं से ही ----- प्राप्त किए जा सकते हैं

छ० ----- अम्ल क्षार के साथ क्रिया करके लवण और पानी बनाते हैं

39. यहाँ पर कुछ लवण दिस जाते हैं उनके रासायनिक सूत्र लिखो ।

क० साधारण नमक

छ० मीठा सोडा

ग० कपड़े धोने का सोडा

घ० पोटेशियम नाइट्रेट

40. लवानी का उपयोग हमारे दैनिक जीवन में बहुत होता है। अकेले
कोई तार उपयोग लिहो :-

का०

खा०

गा०

दा०

